

LEESE, Edward

An explanation of the causes  
why vaccination has sometimes  
failed to prevent small pox.  
London, 1833.

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AN  
EXPLANATION  
OF THE  
CAUSES  
WHY  
VACCINATION  
HAS SOMETIMES FAILED TO PREVENT  
*SMALL POX,*  
AND  
ALSO A DESCRIPTION OF A METHOD,  
CONFIRMED BY EXPERIENCE,  
OF  
OBVIATING SUCH CAUSES.

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BY  
EDWARD LEESE,

Member of the Royal College of Surgeons, Fellow of the Medical Society of London,  
Stationary Vaccinator in the National Vaccine Establishment, &c. &c.

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*a* "Solus populi, lex suprema est."

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"In the multitude of people is the King's honor."

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PART THE SECOND.

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1833.



TO

SIR HENRY HALFORD, BART.

F.R.S., F.A.S., &c. &c.

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Sir,

*In dedicating to you the following Observations on the Practice of Vaccination, a short allusion to facts will express more than anything I can offer in the language of panegyric; your splendid talents having long since advanced you to the summit of medical science, and placed you at the head of the Royal College of Physicians, where you ably preside, amidst your learned colleagues.*

*The same merits and acquirements exalted you to the high and important rank of Physician to His present Majesty, William the Fourth, and to the two preceding Sovereigns.*

*Of the National Vaccine Establishment, you are President also. As a Stationary Vaccinator, I have long laboured in that vineyard: some of the experience so acquired has been embodied in the pages following: these I submit to your notice, soliciting for them your favourable consideration and patronage. With high estimation and respect,*

*I remain, Sir,*

*Your very obedient,*

*Humble servant,*

EDWARD LEESE.

BAKER STREET,

January, 1833.



AN

## EXPLANATION, &c.

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BY way of Preface, I will observe, that the little Bark now sent forth upon the wide ocean, is launched with a goodly portion of confidence; from knowing, by experiment, the materials of which it has been constructed, to be sound and good, and the ballast firm and solid: it is so far ample to sustain lofty masts, and sails of great expanse, to waft it on its way to public favour. Pennants more showy might have been hoisted to attract notice, but usefulness has been preferred to ornament and decoration. It has been put together, as time could be spared from other engagements, by an officer who has long borne a commission in the National Service, as an adventure of his own: if the voyage does not happen to be prosperous, the public service is not to be impugned, neither is

the material to be blamed; but the fault should be attributed to the individual who has arranged the outfit.

At a fashionable Watering Place, and in some parts of this Metropolis, occurrences have recently presented themselves, which have excited in the minds of individuals, and in that of the public, to some extent, doubts and fears as to the safety of themselves or their offspring, in regard to a dangerous and frequently fatal disease; but from which, I am confident, they may be safely, easily, and effectually protected.

The practice at a Public Station, connected with the means of protection, having many years been intrusted to me, I might by some persons be censured for apathy, or, by others blamed as criminal, were I to withhold the result of experience so acquired, and not set it forth for the benefit of the community. I am the more especially called upon to make it known, as my confidence in the Prophylactic, after examining and comparing the adverse with the favourable cases, has increased, as I have found the *practical* part of Vaccination more attended to, and, by that means, from time to time improved.

That sound and able practitioner of the healing art, the late Dr. Heberden, as well as the

illustrious Boerhaave, who published more than a century back, had expectations that a specific for Small Pox would be discovered: the latter, in his Aphorisms relating to that disease, expressly says,—“that such a specific may, one time or another, be found, we have some hopes; and the great use it would be of to mankind, ought to encourage Chemists to go on in the search.” Towards the science of chemistry it is obvious his expectations were directed; thinking from thence a cure would be derived, that should cut short or disarm this pestilence of its fatal, or most dangerous symptoms.

In transferring Lymph, from the paps of the Cow, to the arms of the human subject, Dr. Jenner has shewn that Pathology can accomplish, (in so far as prevention is better than remedy,) more than was even hoped or contemplated, by either of the learned, useful, and benevolent physicians that have been mentioned.

In the few pages that will follow, I shall, in accordance with the favourite motto of Boerhaave, “*simplex sigillum veri*,”—“truth unarrayed,”—endeavour, in plain language, to shew that the doubts and apprehensions which have taken place, have most generally arisen in consequence of negligent and imperfect Vaccination. The inmates of public in-

stitutions will be adduced in illustration, and shewn in contrast with other persons, in whom the Prophylactic maintained its efficiency a fourth part of a century and longer. Some pathological principles, as the basis of safe and effectual Vaccination, will be pointed out; and lastly, will be explained a method of conducting the practice in such manner, as will ensure effect on the constitution, make that effect conspicuous, and cause the impression to be more durable.

The great era of Vaccination commenced in 1798, with a publication from the pen of Dr. Jenner, a distinguished disciple of the Hunterian School; a diligent and careful observer of the works of nature, and a man whose mildness of disposition, and urbanity of manners, endeared him to all who were so fortunate as to come within the circle of his associates. As his name descends to posterity in the pages of history, generations yet unborn will be reminded of the greatness of his discovery; and that, possibly, they would not themselves be then in existence, if Jenner had not taught the means of preserving their forefathers from a malady of the most formidable and destructive kind.

In the Histories of the Plague, we find the destruction of human life to have been fright-

ful and appalling; yet has the devastation of Small Pox far exceeded that, by reason of its continued prevalence, and unceasing ravages. In evidence produced before the House of Commons in 1806, it was shewn that an average of forty-five thousand annually, had been destroyed by this pestilence, in these kingdoms; and in London alone, three thousand; when the population did not amount to more than two-thirds of the present number.

That disposition in Dr. Jenner to improve science, by noticing the operations of nature, induced him to profit by the tales of the dairy farmers in Gloucestershire, who spoke of the immunity enjoyed by their cowherds against Small Pox, which they attributed to blisters, or vesications, derived from the Cow, in the act of milking. Like marvellous stories, or ignorant tales, frequent among rustics, these traditionary rumours passed unnoticed by any, except the usual village throng, until they vibrated on the ears of Jenner: he put them to the test of experiment, and inoculated several human subjects with lymph, taken by him from vesicles in the dugs of that animal. These children he exposed afterwards, repeatedly, to the contagion of Small Pox; and inserted into their arms matter, derived from the pustules, without producing the disease in any of them.

The satisfaction must have been great, the joy exquisite, in the benevolent mind of Jenner, when he ascertained, by the trials he instituted, that the notion of the rustics was founded on accuracy and truth; and that he was really in possession of a safe and easy prophylactic, against a disease that had heretofore produced such suffering, and committed such havoc in society.

The annals of improvements, of inventions, and discoveries, whether assumed or real, most generally inform us, that the individual, who takes to himself the merit, contrives also by secrecy, and by mysticism, or otherwise, to secure to his own coffers, the major part of the pecuniary profit to be derived from such discovery. Physicians and Surgeons, of high professional respectability, testified before the Parliament, that the new practice of Vaccine Inoculation could have been secured to the discoverer, had he been so inclined; and that he, from the higher and more opulent ranks in society, might have gathered, selfishly, a golden harvest; while, through the inferior orders of the community, death might have continued to deal out destruction uninterruptedly. From the enlightened mind, and the benevolent heart of Jenner, emanated nobler sentiments, and actions more philanthropic: he no sooner be-

held the result of his experiments, than he hastened to impart the useful knowledge he had acquired, to the world at large, for the benefit and advantage of mankind generally; offering at the same time, to every philosophic enquirer, such a body of information, as would enable him to judge for himself; and to confirm, or to disprove, the new fact in pathology, by experiments under his own observation.

By means of my talented friend, the late Mr. Ring, author of a History of Vaccination, and several learned productions, I became known to Dr. Jenner, about the year 1802, when he was assiduously occupied in forming, under the patronage of the reigning Monarch, and the different branches of the Royal Family of that period, THE ROYAL JENNERIAN SOCIETY; which merged into the NATIONAL VACCINE ESTABLISHMENT in 1807, under the direction of the two Royal Colleges of Physicians and Surgeons. In consequence of an Act of the Parliament, at the instigation of the Government, to keep up a supply of the genuine virus for the public service, and the wants of the people at large, (neither of which could be done, by the general practitioners of medicine and surgery, in private practice,) stations for extending vaeecination gratuitously to the poor, were opened in different parts of



the Metropolis; where they have all the advantage of receiving the virus in a fluid state, immediately from one to other, in the most efficacious manner. At the St. Marylebone Station, now in Baker Street, the vaccine lymph has been applied to upwards of twenty thousand individuals of various ages.\*

The present Government was disposed to abolish the National Vaccine Establishment, as a measure of economy, but it was found, that without public stations, a continuation of virus could not be maintained; and that the mortality from Small Pox would soon become terrific; and perhaps would again amount to two or three thousand, in London, in a year, as heretofore. It was ascertained also, by the enquiries then made by the Secretary of State, that Vaccination, at the stations, had been more uniformly successful than elsewhere.

The registers that have been kept on, since the formation of stations in 1803, become every year more valuable, as records of the earliest cases, and of the mode of practice at different periods. By advertisement, and by personal

\* In 1832, up to the end of October, I have, with the assistance of my son, vaccinated two thousand and seventy-seven, from a few days old, to three-score years; and under various degrees of exposure to poverty, to small pox, and to other maladies.



application, I have lately sought out some of the earliest patients, after the commencement in Great Castle Street; and find many have been exposed to Small Pox, by inoculation, as well as by casual infection, who yet have resisted all its powers, five-and-twenty, and even thirty, years; giving strong reason for the conclusion, that they will continue to be protected, the full term of human life.

Dr. Jenner's mode of Vaccinating was peculiar. That the fluid he employed might gravitate towards the point of the lancet, he held it as he would a peneil: he made but one puncture in each arm, and was satisfied, if one only of these produced effect: undoubtedly, in some constitutions, the susceptibility to the variolous disease has been removed by such slight vaccination; but, in others, it has not been so successful: and as Time has held on his course, we have been taught, by experience, the propriety of causing a deeper, and more lasting, impression, than one or even two vesicles are likely to effectuate: for if THE FEBRICULA OF VACCINATION, i. e. what, in the phraseology of the schools, is termed SYMPTOMATIC FEVER, be not excited, we have done but little to eradicate the inherent susceptibility, or predisposition to Small Pox, that is natural to all persons. A local vesicle will not suffice; for a slight im-

pression may not be permanent, and may admit the variolous malady sooner or later, subsequently: hence has arisen the notion, that it is requisite to *repeat* the Vaccination, every five or seven years. When Small Pox has appeared, after slight and imperfect Vaccination, I have always found it to have been modified; and, in severity in an inverse proportion to the regularity and intensity of the previous vaccine process; altered in type, shortened in duration, and deprived of the most dangerous part,—the secondary fever.

In the report made to government, by the Royal College of Physicians, it was remarked, “there is little doubt some of the failures are to be imputed to the inexperience of the early vaccinators; it is reasonable to expect that further observation will yet suggest many improvements, that will reduce the number of anomalous cases, and furnish the means of determining with greater precision, when the vaccine disease has been perfectly received.”

So active and virulent a material as a particle of Small Pox matter, when applied effectively to the arm of a human subject, is sure to be followed by fever, and other symptoms, demanding attention in every stage. With vaccine lymph it is not so: indeed its mild and benign qualities have often been the cause why

the effects have been neglected, or carelessly managed; and thus has the practice itself frequently been brought into jeopardy, its efficacy doubted, and it has met with that obliquy, which in fairness and in justice, should have fallen upon the operator. The progress of Vaccination should be inspected almost daily; not to resist or to guard against dangerous, or violent symptoms, but to be assured that it proceeds regularly; to notice if the Symptomatic Fever does take place in proper degree, so as to leave impression on the general system; for if it does not, we have done but little good for our patient, and he will receive but an inadequate protection against his malignant enemy. This attention is the more needed, if dry virus has been used, lest that may have become decomposed, or in some way deteriorated, (which is the case not unfrequently), and the result be a spurious pustule.

Motives truly benevolent have sometimes induced ladies, clergymen, and others, to take up the Jennerian lance, and wield it, without the necessary judgment to discriminate the effects resulting from the wounds they have inflicted: often professional men have been careless, and have thought the daily superintendence of the slow and quiet march of a vaccine vesicle to be unnecessary; and almost "infra

dignitatem:" such practitioners should be reminded, that they are endangering human life, are tampering with security, and leading their patients, by the supposition of having received protection, into dangers, that possibly they would otherwise avoid. Dr. Jenner, in one of his later publications, (which he did me the favor to present to me), writes,—“ a general knowledge of the subject is *not* sufficient to enable, or to warrant, a person to practise vaccine inoculation: he should possess a particular knowledge; and that which I wish strongly to inculcate, as the great foundation for the whole, is, an intimate acquaintance with the character of the true and genuine vaccine vesicle: the spurious pustule would then be easily detected, whatever form it might assume, and errors known no more.”

The Doctor might have added, that a solitary vesicle, even when “ true and genuine,” does not at all times, or to all persons, impart sufficient protection. Perhaps we might give a sort of running lease of security, terminable at the expiration of seven, fourteen, or twenty-one years, by producing one, two, or three vesicles; or what may as readily be effectuated, give such and so many, as will ensure protection during life. All will depend on the degree of the constitutional effect: to insure which,

and to make it at the same time apparent to the eye of even a common observer, will be further explained, as I proceed to notice and describe the double process.\*

To repose confidence in the production of one, or of two vesicles, is at all times imprudent; and, fortunately, the pain or inconvenience of several is so small, as to be, in proportion to the increased degree of security, unworthy of consideration. The number may be increased on the fifth or sixth day; or, if that period has passed by, the patient should, after the lapse of a week or two, or longer space, be vaccinated *de novo*; as a vaccination so slight will not give protection to every constitution: one or both of the vesicles may perhaps be interrupted, possibly by the nails of the patient, a tight sleeve, or other violence, and he will be likely to have afterwards a modified Small Pox, the varioloid disease of some Nosologists; which, sometimes commencing with much severity, excites great alarm in the minds of the surrounding friends: suddenly, however, the violence usually abates, about the fifth or the sixth day, and all are agreeably

\* A mode that has been urged by Mr. Bryce of Edinburgh; but I believe was first suggested by a Surgeon in Cornwall, named Hugo, in one of the earliest numbers of the Medical and Physical Journal.

surprised to witness the mildness of the later stages; the dreaded secondary fever not following at all, or in a slight manner only. Cases of this kind of illness were detailed in a former publication; among others, that of the Honourable Robert G——, now a conspicuous member of the Senate; and that of the Son of Sir Henry M——. These had been reported to the Board of the National Vaccine Establishment; and Sir Henry Halford, and other Physicians who attended them, gave it as their opinion, that escape from death might be attributed to some antivariolous power, left by the previous vaccination, by which the susceptibility to Small Pox had been diminished and controled, though not extinguished: the Doctors at the same time remarking, that they had not seen any patient recover after having had some peculiar symptoms which they enumerated.

Towards the completion of the eighteenth century, and in the short progress of the nineteenth, improvement has made wide and rapid strides in the art of destruction, as well as in other sciences; the Healing Art, with Vaccination it's younger sister, has progressed also: and fairly it may be supposed, that the untoward cases alluded to would not have happened, had those personages been vaccinated accord-



ing to the present mode of practice at the Government Stations. The weak points of the citadel having been discovered, we have learned the method to secure our patients more effectually against the assaults of the besiegers. Malthus, and his converts, will perhaps hear with dismay, that the practice of vaccination will preserve and increase the population of this Globe, more certainly than any suggestions of their's, or the chances of war, are likely to diminish it.

“ In the multitude of people is the King's honor.”

Of the negligent and inadequate manner, in which the new practice has been conducted in different parts of the kingdom, very many individual instances could be adduced in illustration; but the following are strong proofs on a larger scale.

In June, 1822, it became a part of my duty, as House Surgeon to the Clergy Orphan Society, to make a particular inspection as to the safety of the children in their School, near the Regent's Park, about one hundred in number, coming from various parts of the kingdom, who had all brought with them, according to regulation, certificates of having had Small Pox, or of having been vaccinated. It was discovered, that fifty-six

of them had such imperfect cicatrices in their arms, as to make it evident they had been only *partially* vaccinated, and were not secure against the attacks of Small Pox. These were all re-vaccinated with fluid virus, from an infant taken to the house of the institution for that purpose. In almost every one of them the effect was so great, the areolæ so perfect, the whole progress so regular, as to make it manifest that most of them would have taken the variolous disease, had they been exposed to it; the previous vaccination having been managed in such manner as not to reach and impress the constitution sufficiently.

In June, 1832, an Officer in the Royal Horse Guards became violently ill with Small Pox; others of the same corps, wishing to ascertain their security against the same malady, requested me to put them to the test of a second vaccination: accordingly a child was conveyed to the Barracks at Knightsbridge, and fluid virus was applied to six of these gentlemen; by which means it was clearly shewn, that two, if not three of the number, were not previously safe from the variolous malady. Mr. N—— more particularly.

When appearing in print before the public on a former occasion, several documents of an official kind, that had emanated from different



public bodies in favor of vaccination, having been inserted, it is unnecessary to occupy the time of the reader, on the present occasion, by repeating them: the abstract question has been examined, and decided upon affirmatively, by competent authorities. I have now to speak only in reference to the practical part of the subject.

That some individuals out of the large number vaccinated, and that too under a great variety of circumstances, should take Small Pox, is not to be wondered at; but it is a point, worthy of investigation, as a matter of fact, or of science, if it were not so on the score of humanity, whether a few exceptions to a law which appears to govern invariably the animal economy, are not more likely to have been caused by an error in practice, rather than by any mutability in the law itself. To me it appears, such occurrences may be explained satisfactorily, in accordance with the known and acknowledged principles of pathology; that is to say, by defective virus, or by inadequate application of it, if it were perfect and genuine.

To every one it is known, that certain diseases do not appear in the human constitution more than once; the malady having taken place a first time, leaves a certain impression upon the constitution, and effectuates such a

change throughout the system, as to destroy the predisposition, or susceptibility, in the individual, to that particular disease. Chicken Pox, Small Pox, and Measles, are of this kind; and by the writers on pathology it is admitted, this alteration is brought about by means of the specific symptomatic fever, which accompanies each of them respectively. The Febricula induced by the vaccine process, accomplishes this change, when properly managed, as far as Small Pox is concerned.

Those members of the *Æsculapian Fraternity*, who have pursued their labours extendedly through different grades of the community, have, ever and anon, met with whole families, in which a peculiar susceptibility to particular diseases existed, from which they have suffered more severely and intensely, than other persons with the same malady.\* Indeed whole nations of people, as well as different families and individuals, have so suffered with small pox, in consequence of climate, of manner of living, or peculiarity of constitution. I have no doubt, that the individual, who receives the disease, will have it

\* There are some constitutions very liable to receive small pox, and on which that contagion operates very violently. MONRO.

mildly or severely, according to the state of his own constitution, structure, or situation, whether the specific infection be derived from a distinct, or a confluent kind ; from a benign, or a malignant species ; all depending upon his own habit, or, what is denominated, in the language of physies, *ideosyncrasy*. At public institutions, virus, taken from different patients, has proved this repeatedly.

In accordance with the preceding analogy it may be inferred, that certain individuals, in whom the susceptibility to the variolous disease is great, will require a more intense degree of the symptomatic fever, i.e. the vaccine febricula, to eradicate from their constitutions the predisposition to small pox. In some, a solitary vesicle may be sufficient ; while others will require two, four, or six. Happily the ultimate of security is easy and without danger ; and therefore should, on every occasion, be adopted.

The learned Doctor to whom mankind became so largely indebted, for the origin of vaccination, was particularly circumspect as to the proper state of the virus he implanted ; and gave minute directions as to the taking and preservation of it. There are persons of the present day, who think that we should revert to the animal from whence it was first

taken; which has been done repeatedly by myself, without any satisfactory result, hitherto. I may perchance renew the attempt, as a matter of curiosity; but, as a measure of utility, it is not expedient. The genuine vesicle is seldom to be met with in the cow; and more rarely, can it be seen in a state from which lymph can be obtained; for the hands of the milker soon discharge the contents, destroy the progress, and excite ulceration: matter then taken, would be far from pure and agreeable to our wishes, could it be distinguished from other of the animal secretions. As this plan therefore is almost impracticable, and will not suit for general purposes, it is better to make use of such as has already been tried, and has manifested, upon the human subject, genuine properties; and of such, the Stations established by Government, keep up a supply. It does not suffer change, or admixture, by repeated transmission; and all the properties is first possessed, remaining the same, it is again and again produced, *de novo*. Not any Pathologist will doubt, if each variolous pustule contains matter, capable of producing small pox, as perfect, and genuine, as the original derived from the camel or other quadruped: neither will any Botanist, or common observer, suppose, that an acorn will fail

to produce an oak, that will bear, in due time, a crop of acorns as perfect as the original. Neither is there such danger, as has been imagined by some, of the admixture of other morbid fluids. In public practice it frequently has happened, that a child has been brought, and has been vaccinated, who had already been exposed to small pox; and, two or three days after, this has manifested itself; it having been in the constitution previously, though not apparent: such infant will have both the complaints co-existing: nevertheless, pure unmingled virus has been taken both from the vaccine vesicle, and the variolous pustule, while each was seated so as almost to touch each other in the same arm; and the fluid from either has produced, when applied to other subjects, only the exact similitude of that from which it had been taken. The same remark will apply to other diseases, when existing simultaneously with the cow-pock.

When practicable, vaccine virus should be applied in a fluid state, transmitted from one patient to another, by bringing them together in the same house, for if it be kept a few hours only on a metal lancet, it may become deteriorated. Dr. Jenner used to appear almost horrified, by the idea of a particle of rust being inserted with the matter. If it be intended to preserve

it more than a day, it should be received on points of ivory, which, after a puncture with a common lancet, may be inserted into the orifice, without any previous moisture: plates of glass are very objectionable; as, from them, it cannot be taken without steam, or some fluid that may dilute or decompose it. The virus should be introduced into two or more places, in each arm; the punctures merely penetrating the cuticle, and allowing scarcely a speck of blood to appear, lest it should dilute or carry away the lymph.\* The effect should be inspected, almost every day after the fourth, to be assured that the progress is regular, that the appearance of the areolæ is at the proper time, and that the constitution receives the requisite impression. Great care should be taken to preserve the vesicles from interruption, by scratching, by a hard or tight garment, or by any other violence; lest they degenerate into irregular pustules, producing much soreness,

\* In a market town in Kent, I saw a practitioner commence to vaccinate an infant, by placing his thumb on the lancet some distance from the point, to regulate the depth he meant to plunge it; saying, he liked "to make sure work by going deep enough." The child cried piteously, as the blood trickled to the ground from each elbow. Not long since a paper appeared in a Medical Periodical, sanctioning, if not encouraging, similar ignorant and unnecessary severity, at a public institution.



without leaving to the patient the wished for protection.

So long as they, who grasp the Jennerian lance, wield it as feebly and unskilfully as many have heretofore done, we must expect to hear that Small Pox appears, sometimes in persons to whom the vaccine virus has been applied: such must lose their confidence in the prophylactic, in itself all-powerful; while others who apply it more ably, become more and more assured, that their subjects will remain untouched by the destroying demon—variola; and, that hoary 'Tine will pass by, year after year, and find them in safety and in health.

As doubts and fears have arisen in the minds of individuals in the lower orders of society, they have repaired to the public stations, where they are put to the test of a second vaccination: those, who come to that under my direction, have recent limpid virus inserted into their arms: if they were not safe previously, this will make them so, and restore confidence in them: if they had been secure from the first, a very trivial irritation will take place, without any constitutional affliction.

From the register I extract half a dozen of the last cases of this kind, as having been done in the first instance, as far back as five and twenty or thirty years.

No. 826. AA. Mary Taylor, No. 3, New Quebec-street, was vaccinated twenty-eight years since. The second insertion of virus had very slight effect

No. 1015. 7. Ann Green, No. 4, Selby-mews; twenty-five years have elapsed since she was vaccinated, in Bedfordshire

No. 1018. 7. James Chapman, now coachman to the Rev. Mr. Colgan, was vaccinated by Mr. Kilpatrick, of St. Martin's-lane, thirty years back. Slight effect by the second inoculation.

———— Elizabeth Eagles, Blandford-mews, Baker-street, when at Northampton thirty years since, was vaccinated by Mr. Bonnet of that town; has since been exposed frequently to small pox, without injury.

No. 1158. 7. Susannah Townsend, now of No. 3, King-street, Golden-square; was vaccinated about twenty-seven years since.

No. 1027. 7, Sarah Wright, No. 47, South Molton Street; full thirty years have elapsed since the vaccine lymph was applied to her arms in Westmorland, perfect cicatrices are now apparent; to satisfy her mind, active fluid virus was inserted, with the usual slight effect under such circumstances.

The appearance and degree of effect, re-



sulting from the second insertion of vaccine fluid, after such long intervals from the first, made it evident that the former had been effectual, and continued to protect them, as much as that of small pox could have done.

The observations scattered through the preceding pages, are offered as applicable to vaccination generally ; and, if the process be conducted in conformity with the suggestion already expressed, it may be relied upon confidently, as a protection against the variolous malady.

The age of the vesicle, from which virus is to be taken for inoculation, is a matter of some importance. There are those in high authority, who are inclined to believe the prophylactic quality exists in perfection, one, or perhaps two days only, and those neither late nor early in the progress ; but for my own part, I think the properties are particularly active, and more likely to produce effect, and possibly more completely so, when taken at the earliest period at which it can be obtained, even earlier than the eighth day : certainly, after the areola has been developed, the fluid is more aqueous and limpid, and perhaps does lose some of its efficiency. The late Dr. Pearson asserted, that if nineteen portions of water were mingled with one of virus, it would not

be prevented, thereby, from taking effect. The crusts that have fallen from the arms, when the whole process has been completed, have, softened with water, produced vesicles. The great principle upon which all prophylactic efficiency depends, is, in my opinion, the symptomatic fever ; and such virus, as, upon the due application of it, will produce a proper degree of this, is the “*sine quâ non*.”

The Febricula accompanying vaccination, i. e. the symptomatic fever alluded to, as so important with reference to the safety of the individual against subsequent variola, frequently escapes the notice of those who have the care of infants ; or, sometimes, other infantile disorders, connected with teething, or with intestinal irritation, may be mistaken for it. Those persons, who are of age sufficient to express their feelings, inform us they experience, during a few hours, or a day, a general lassitude, a slight degree of head ache, and sometimes nausea, with a sensation of fulness under the arms, in the glands of the axillæ: it is seldom they are conscious of any thing like rigors, or increased heat ; and, for the most part, these symptoms would pass without observations, if the patients’ attention were not directed to them by queries.

So to conduct the practice, as to ensure, and

to exhibit conspicuously, this affection of the whole system, is to rescue vaccination from much of the doubt, uncertainty, and disappointment, that have too often attended it hitherto. By a two-fold insertion of the vaccine fluid, all this may be easily accomplished; and the great object in view, in the present, and in a former publication, is to set forth, and explain, the advantages to be gained by adopting that mode generally, and to impress it on the minds of practitioners and the public.

The practice of Vaccination was quite in its infancy, when I was appointed in 1803, by the Medical Council of the extinct Royal Jennerian Society, in conjunction with my departed friend Ring: the number of cases then was small; but, at the Station of the National Establishment in Baker Street, more than two thousand had received protection, gratuitously, in the first ten months of 1832. The practice, now, has attained to adult age; and competent authorities have satisfied the Government, that Vaccination at the Stations has been particularly successful, and that, without them, a succession of virus could not be kept up. The Stationary Vaccinators are obligated to supply and assist each other occasionally, or, from the lack of patients in the winter months, it would be exhausted; and if once lost, could not easily

be restored, as has before been shewn; then again would the Moloch be restored to power, and his victims would fall in thousands every year.

When vaccine fluid is applied to an individual for the first time, a vesicle of peculiar character ensues, that goes on increasing, until about the ninth day, when it is surrounded with an exanthematous areola; at which period desiccation begins, and the crust falls off in eight or ten days more.

If similar virus be inserted into the arm of one, who has either had Small Pox, or been vaccinated at any distant time previously, a small degree of angry looking and irregular inflammation takes place, attended with some irritation and much itching; and there will be a papulous hardness at the point punctured; but seldom a distinct or perfect vesicle appears, and these effects will decrease after the fourth or fifth day.

When virus is deposited a first time in one arm only, then, in the other five days subsequently, the effects will be different from either of the preceding instances: the first will proceed slowly, the second much more rapidly; and each will have a perfect areola, at one and the same time: these will continue twenty-four, or forty-eight, hours longer than usual; and

they will fade together; the last made vesicle being perfectly characterised, and exactly like the other but in miniature size.

The consideration of the phenomena, enumerated in the three last paragraphs, on the relation which they bear to each other, will exhibit some of the advantages to be derived from the double process, or two-fold inoculation. Puncturing one arm five days after the other gives not any more pain, or trouble, than doing both at the same time; the virus for the second being taken from the former. If the first has not begun to act upon the system generally, the repetition will incite it to do so; and certainly, the rapid march of the second would not take place, and the appearance of the different areolæ be synchronous, did not the system feel some influence induced by the first. These form the index to the symptomatic fever, and point out the presence of the vaccine febricula, or constitutional effect; and this being somewhat prolonged, the impression will be stronger, deeper, and indelible.

The method of vaccine inoculation I advocate, and which I adopt with my own patients, is to cause an infant, from whom the lymph is to be taken, to be conveyed to those to whom it is to be applied, that the transfer of virus may be effected whilst yet fluid: one arm is

inoculated first; and after the expiration of five days, or sometimes of six, lymph is taken from this arm, and applied to the other; and the rapidity of progress in the second, whether fever be perceptible or not, will indicate the existence of constitutional effect.

The practice of vaccination does not destroy, like inoculation for small pox, by producing and disseminating infection; and therefore, several governments on the Continent of Europe and America, have prohibited variolous inoculation; the infection of which, is kept alive by such means, and diffused abroad to the destruction of thousands. “ It behoves every member of society, to conform to laws enacted for the preservation and furtherance of the general good: thus a man, who sets fire to his house, is punished by law, although the house and its contents be his own property: there are quarantine laws, to prevent the introduction and spreading of plague, leprosy, &c. on pain of death: yet these are but partial evils, compared with small pox. Firing a house can endanger only a few persons; the introduction of plague, a few thousands, during the time it continues its violence; but small pox destroys each year, and every year, forty-five thousand people. This has been proved before the Honourable House of Commons, by Dr. (now Sir



Gilbert) Blane, and others. Endeavouring to restrain plague, and admitting the inoculation of small pox, is verifying the adage, viz. strain at a gnat, yet swallow a camel. In this kingdom, it is much to be desired, that the legislature would turn its attention to small pox inoculation, and that it would adopt some means to restrain the practice. In a pamphlet, attributed to the late Chief Justice of Ceylon, it is written, ‘it would, I apprehend, be no arbitrary or rigorous decree of the legislature, that should wholly prohibit variolous inoculation; but longer to forbear to regulate and limit that practice, would be a vicious acquiescence in individual caprice, to the public detriment.’ ”\*

The Royal College of Surgeons have published the following:—“ We, the president, vice-presidents, and council, of the Royal College of Surgeons in London, deeply impressed with the many fatal instances of small pox, which daily occur in this Metropolis, and in various parts of the Kingdom, assured that such events are in a great degree consequences of the support and propagation of that disease by inoculation, and unshaken in our confidence in the efficacy of vaccination in exterminating small pox; from a sense of duty to the commu-

\* Explanation of Causes, &c. &c. part first.

nity, hereby renew the engagement entered into by the Court of Assistants in 1813, not to inoculate small pox, but to pursue, and to the utmost of our power promote, the practice of vaccination. And we earnestly recommend, to all members of the College, similar engagements, convinced that the entire extinction of small pox would be the happy result of the suppression of inoculation of that disease, and the universal adoption of vaccination.”

If one or two persons in every hundred of those vaccinated, were to take small pox subsequently, instead of one in many thousands, even in the negligent manner in which it has often been conducted, it would still be worthy of general notice and adoption, in consequence of the uniform safety and mildness of its qualities; and because it is not infectious by effluvia to others. On principles consonant with pathology and reason, I have endeavoured to explain why it is, that, once in several thousand cases, the variolous malady does make its appearance, in a modified form afterwards. My confidence in the Jennerian Prophylactic has increased with practice and observation, and is now more firm than it was twenty years back. When vaccination is properly conducted, it is adequate to impart protection equal to that which has been derived from the inoculation of



small pox; without any of the hazard to the patient, or danger to the surrounding population, by the dissemination of infection.

If these observations, put together in short and detached intervals, as the time could be taken from other avocations and important duties, shall diffuse a gleam of light upon the small cloud of obscurity remaining, and shall relieve some minds from doubt and apprehension, as to the safety of themselves, or their children, it will have been well employed, and the practice will be promoted by increased confidence in the security imparted by it. Many will thereby be rescued from suffering and from danger, from blindness, and from deformity; and not a few only,—from death! And thus I shall myself be gratified in being useful to mankind; the object of every philanthropist, and one of the great ends of all practical religion.

## FINIS.

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The days for public Vaccination, are Mondays, Wednesdays, and Fridays, from the hour of Ten until Eleven; when poor persons attending at No. 16, Baker-street, may receive (gratis) all the benefits to be derived from fluid virus, &c.

London, January, 1833.







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Author Leese:  
An explanation of  
the causes ...  
1833.  
Call no.

~~IMMUNIZATION~~

VACCINATION

